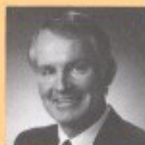


Compiled by Geoffrey M. Knight



As dentistry becomes increasingly deregulated and the profession looks nervously 'down the barrel' of free market advertising, it is easy to forget the principles that have been the basis of so many successful practices in the past and will continue to be into the future, irrespective of the contemporary political environment of the time.

Successful dentists are caring dentists who focus on prevention as the cornerstone of their practice philosophy. The control of dental disease has been expressed in many ways but can essentially be distilled into reducing the frequency of fermentable carbohydrate intake, controlling plaque levels and increasing the resistance of the oral tissues to disease.

Diet control and oral hygiene techniques are ongoing challenges of self-discipline and a frustration for those trying to bring about lifestyle changes. The use of fluorides either ingested or applied topically have provided significant benefits in controlling dental caries.

Successful dentists are caring dentists . . .

A relatively simple way to reduce caries incidence in general practice is to encourage patients to carry out monthly, self-applications of a 1.23 per cent acidulated phosphate fluoride (APF) gel, brushed on before retiring. Furthermore, brushing twice daily for a week with APF gel will often eliminate cervical sensitivity. Patients should be counselled about continual use of APF gel as demineralization of tooth structure can occur with repeated

and frequent use. Children must be old enough not to swallow the gel otherwise fluorosis may develop in their permanent dentitions. Fluoride varnishes are also available, but these generally require professional application and are less cost effective than self-applied techniques.

Initiatives being explored by Professor Rory Hume in California suggest patients with a predisposition to dental diseases may reduce their susceptibility by incorporating dietary changes and medicaments such as chlorhexidine to establish a less pathogenic oral flora. Professor Hume further suggests that when used in combination with the topical application of fluorides to carious tooth surfaces prior to restorative procedures, ongoing reductions in susceptibility to both caries and periodontal disease may develop.

The profession's monopoly over dentistry has discouraged research into more efficient diagnostic techniques, and to their credit, Ivoclar has introduced a diagnostic protocol that enables dentists to perform a series of simple tests within their practices that may help to identify patients with a high susceptibility to dental disease.

Fissure sealing offers patients the next tier of protection before more invasive restorative procedures are undertaken. While some practitioners

routinely seal all fissures in permanent teeth, there is a fine line between overservicing and supervised neglect that requires a measured judgment depending upon patient co-operation and the disease potential of the mouth.

The diagnostic skills needed to differentiate between sealing a sticky fissure or preparing a cavity are amongst the most challenging in dentistry. It is bewildering that there have been suggestions that auxiliaries can be trained in a couple of years to exercise the judgment required in such circumstances.

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A fissure sealing procedure should have the following benefits:

- Prevent caries initiation.
- Prevent proliferation of existing caries.
- Be predictable.
- Be long lasting.
- Be user friendly.
- Be minimally invasive.
- Be aesthetic.
- Be both cost and time efficient.

The use of unfilled resins as fissure sealants provide real benefits in caries control, however, every ►

practitioner who used these techniques has experienced some unpleasant surprises by way of sealant loss or caries proliferation under the seal.

Light-activated resins tend to be lost from the buccal surfaces of lower teeth and the lingual surfaces of uppers because practitioners fail to supervise their assistants to adequately light-cure these areas (Fig. 1).

Glass ionomer cements initially looked promising as a suitable fissure sealing material although clinical experience showed that GICs used in this manner were soon lost from the fissures. Dr Lennart Forsten of Turku in Finland has suggested, however, that the close proximity of the glass ionomer cement to the fissure can generate sufficient fluoride release to provide on-going protection against caries

even though the originally placed glass ionomer has been lost.

The first generation of dual-cured glass ionomer lining cements (Vitrebond 3M) also looked promising at first, but performed poorly clinically over relatively short periods. Figures 2 and 3 show the unsatisfactory clinical result of Vitrebond when used as a fissure sealant and coated with resin over an 18 month period.

Second generation dual cured glass ionomer cements (Fuji II LC GC, Photac-Fil ESPE, Vitremer 3M) have been promoted as true restorative materials and show promise as fissure sealants, especially when used with a composite resin overlay.

The following technique describes a process that generally fulfills the clinical requirements of a fissure sealant by having a glass ionomer cement at the tooth restorative interface and a composite at the restorative oral interface.

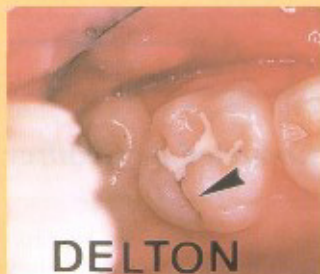


Fig. 1

Technique summary

- The decision to apply a fissure sealant will depend upon both the clinical appearance of the tooth and an assessment of a patient's potential to develop dental caries.
- Open the fissure slightly with a 12 fluted tungsten carbide bur in a high speed handpiece. This has two benefits. Firstly, it removes debris and pellicle from the fissure and secondly, aids in the diagnosis of underlying caries by opening up the fissures sufficiently to produce the sudden deep penetration of a sharp bur should there be an existing lesion (Fig. 4).
- Etch the fissure for 10 seconds with 37 per cent phosphoric acid, wash and dry with oil free air (Fig. 5).
- Isolate the tooth from the oral environment (prior to etching if rubber dam is used).
- Apply a thin layer of dual cured glass ionomer cement over all fissures using a periodontal probe (Fig. 6).
- Take a small increment of composite resin (dentists tend to be over generous when applying resin) and puddle the material into the centre of the unset glass ionomer, working away from the fissures and up the incline planes of the tooth (Fig. 7, Diagram 1).
- Dual cure the glass ionomer and composite resin for 20 seconds. As the resin cures before the glass ionomer cement significant polymerization shrinkage will occur



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6

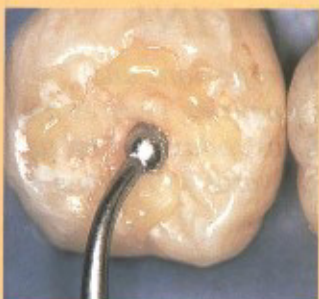


Fig. 7

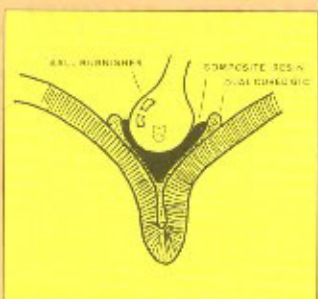


Diagram 1

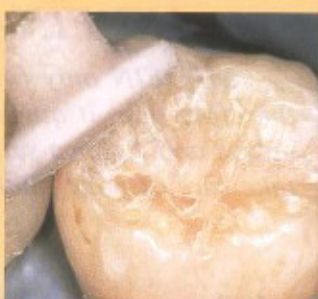


Fig. 8

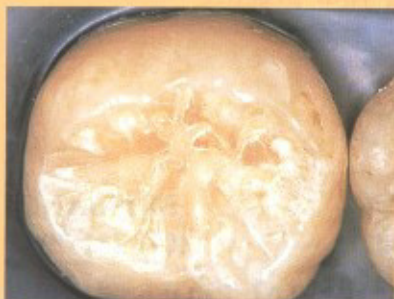


Fig. 9

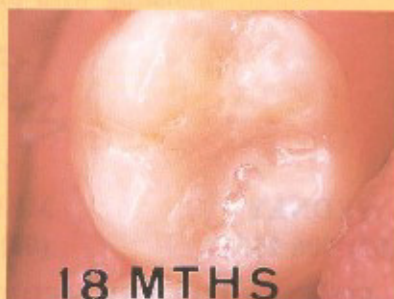


Fig. 10

prior to the ionomer hardening, reducing internal stress within the composite.

- After curing, the sealant can be contoured within the occlusion using either diamonds or stones and finished with Dentsply Enhance discs (Fig. 8).

- Some manufacturers recommend that the surface of the sealant should be coated with a thin layer of resin glaze to protect the glass ionomer cement exposed at the cavo surface margin. This step does not appear to have a major clinical benefit (Fig. 9).

Figure 10 is a clinical example of a fissure sealant placed in this

manner after 18 months. The glass ionomer cement against the tooth surface will inhibit both caries initiation and the proliferation of any remaining decay and the hybrid composite resin provides a wear resistant, long-term restoration on the occlusal surface. The use of light-curing technology enables the placement of an aesthetic, time efficient restoration with minimal material costs.

Changing political attitudes are likely to generate more advertising for all professional services. It is well to remember in such an environment the well-worn cliché about 'knowing how much you care' has been and will remain the foundation of every successful dental practice.

Information about the Australian Society of Dental Aesthetics may be obtained from:

Dr Malcolm Cooke, Suite 1, 1761
Pittwater Road, Mona Vale NSW 2103.
Phone: 02 997 8511.

Dr Tim Latham, 76 Turnham Avenue,
Rosanna Vic 3084. Phone: 03
9457 2738.

Dr Jim Choimes, 100 Currie Street,
Adelaide SA 5000. Phone: 08 231 5324

Dr Andrew Bocherek, The Kings Hotel,
517 Hay Street, Perth WA 6000. Phone:
09 221 5454.

Dr Kerry Eupene, 111 Smith Street,
Darwin NT 0800. Phone: 089 81 9149.

Dr Peter Elstathis, PO Box 142,
Mudgeeraba Qld 4213. Phone: 075
79 9900.